

RECENSION OF THE MEXICAN SPECIES OF *ZALUZANIA*
(ASTERACEAE: HELIANTHEAE)

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ABSTRACT

Preparation of a treatment of the tribe Heliantheae for the Comps of Mexico has prompted the following paper, this occasioned by the description of a single novelty in the genus, *Zaluzania durangensis* B.L. Turner, *sp. nov.* Additionally, I have chosen not to recognize *Z. augusta* var. *rzedowskii*, treating this as synonymous with the typical var. *augusta*. So treated, Mexico contains 11 species of *Zaluzania*, most of these occurring in montane habitats of north-central Mexico. A figure of the novelty is provided, along with a key to species and maps showing distributions, all of this in the format of my Comps of Mexico (cf. Turner 2009, 2010). *Phytologia* 94(3): 319-333 (December 1, 2012).

KEY WORDS: Asteraceae, Heliantheae, *Zaluzania*, Mexico

ZALUZANIA Pers.

Suffruticose, perennial herbs, shrublets or shrubs to 4 m high. Stems simple and arising from fleshy tuberous roots, or much-branched from woody tap-roots. Leaves mostly alternate, simple or pinnately parted. Heads discoid or radiate, few to numerous in terminal corymbose panicles. Involucres campanulate, 2-3 seriate, the bracts subequal. Receptacle conical, paleate, the pales persistent and clasping the achenes. Ray florets, when present, mostly pistillate, rarely neuter, fertile, the ligules white or yellow. Disk florets numerous, the corollas white or yellow, usually "capping" the achenes, often conspicuously so. Achenes clavate or narrowly obovate, black, glabrous or somewhat

pubescent, mostly epappose, or those of the ray with 2-6 short inconspicuous scales. Base chromosome number, $x = 18$.

Type species, *Zaluzania triloba* (Ort.) Pers.

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A genus of 11 species, with the exclusion of the South American elements referred to *Kingianthus* by Robinson (1978a,b). The species are mostly shrubs or suffruticose herbs largely confined to rather dry habitats. Sharp (1935) and McVaugh (1984) retained the monotypic genus *Hybridella* within *Zaluzania*, but I follow Olsen (1979) and Panero (2007) in its treatment as a good genus. Olsen also transferred *Z. grayana* (previously accepted by Sharp) into *Viguiera*. Robinson (1981) treated *Zaluzania*, *Hybridella* and *Chromolepis* as the only members of his subtribe Zaluzaniinae; Panero (2007), however, included only *Hybridella* and *Zaluzania* in the latter subtribe.

KEY TO SPECIES

- 1. Leaves simple, entire to dentate or with shallow lobes.....(3)
- 1. Leaves deeply dissected, either tripartite or pinnately parted.....(2)
- 2. Stems and foliage uniformly pubescent with appressed soft short hairs**Z. parthenioides**
- 2. Stems and foliage pubescent with an uneven mixture of short glandular trichomes and coarse hispid hairs, the latter 1-2 mm long **Z. triloba**
- 3(1). Heads discoid; w Chi, n Dur**Z. discoidea**
- 3. Heads radiate; Coa to Tam, southwards(4)
- 4. Disk florets white; ray florets white, or absent.....**Z. pringlei**
- 4. Disk and ray florets yellow.....(5)
- 5. Leaves not bicolored, about equally green or greenish on both surfaces, coarsely hispid or hispidulous beneath, not at all white-tomentulose.....(8)
- 5. Leaves to some extent bicolored, moderately to densely white-tomentulose beneath, greener above.....(6)
- 6. Ray florets with ligules mostly 4-10 mm long; involucre mostly 5-7 mm wide.....(10)
- 6. Ray florets with ligules mostly 10-15 mm long; involucre (pressed) mostly 9-15 mm wide.....(7)
- 7. Leaves lanceolate, mostly 4-6 times as long as wide....**Z. mollissima**
- 7. Leaves broadly ovate, mostly 2-3 times as long as wide.....
.....**Z. megacephala**
- 8(5). Leaves thick, the blades abruptly deltoid or cordate, scarcely, if at all, tapering upon the petioles; e Pue and adjacent Ver
.....**Z. subcordata**
- 8. Leaves relatively thin, the blades ovate, clearly tapering upon the petioles; widespread.....(9)
- 9. Leaves white-tomentulose beneath; petioles not clearly winged;

- wide spread.....**Z. augusta**
 9. Leaves otherwise; petioles winged for 1-2 cm; Chi, Dur.....
**Z. durangensis**
 10(6). Petioles unwinged, not clasping the stem; Dur, e Jal.....
**Z. delgadoana**
 10. Petioles winged, clasping at the base; Mor, Pue, Gue,
 Ver and Oax**Z. montagnifolia**

ZALUZANIA AUGUSTA (Lag.) Sch.-Bip., Flora 44: 562. 1861.

Map 1

Zaluzania augusta var. *rzedowskii* McVaugh

Dur, Zac, Agu, San, e Jal, Gua, Que, Hid, Mic, Mex, Mor and Ver, Central Plateau, dry hillsides, 1500-2500 m; Sep-Nov.

Shrubs or shrublets 1-3 m high; stems much-branched, puberulent, glabrate with age; leaves 1.5-7.0 cm long, 0.5-4.0 cm wide; petioles 2-10 mm long; blades ovate to ovate-lanceolate, the surface greenish above, white-tomentose below, the margins entire to crenulate, serrate, or rarely lobed; heads radiate, numerous in cymose panicles, the ultimate peduncles mostly 5-15 mm long; involucre 3-4 mm long, the bracts subequal; ray florets 8-11, the ligules yellow, 5-7 mm long; disk florets 50-70, the corollas yellow; achenes 1.5-2.0 mm long, those of the ray with usually 4 scales (rarely absent); chromosome number, $n = 18$ pairs.

This is a widespread variable species under which McVaugh (1984) and Olsen (1979) recognized two varieties, the typical var. *augusta* and var. *rzedowskii*. The characters used in their recognition (largely pappus scales and leaf color) are extremely variable and seem not to circumscribe meaningful biological entities, there being much intergradation of the traits concerned.

Olsen (1979) keys and describes *Z. augusta* as having entire leaf margins, but numerous collections from throughout the range have serrate or sub-serrate margins.

ZALUZANIA DELGADOANA B.L. Turner, *Phytologia* 58: 228. 1985. **Map 2**

Known only from s Dur and n Jal; arid shrublands, 1800-2100 m; Sep-Nov.

Shrubs 1-3 m high; stems much-branched, densely hirsutulous; leaves 3-4 cm long, 1.5-3.0 cm wide; petioles 6-10 mm long; blades deltoid-triangular to nearly cordate, abruptly truncate, not tapering upon the petioles, densely short-hirsutulous on both surfaces, the lower surfaces markedly venose and atomiferous-glandular, the margins crenulo-dentate; heads radiate, in rounded terminal cymules; involucre 3.5-4.5 mm high, 2-3 seriate, the bracts subequal; ray florets 5-8, pistillate, fertile, the ligules yellow, 4-5 mm long; disk florets numerous, the corollas yellow, capping the achenes; achenes of ray and disk florets similar, black, glabrous, epappose.

This is a very distinct species, perhaps closest to *Z. montagnifolia*. The single Jal collection differs in having somewhat larger heads and more densely pubescent leaves.

Olsen (1979), in his treatment of *Z. megacephala* var. *coahuilensis*, notes, "One collection [NY, US], *Pennell 18521*, from Durango, appears to be far out of range for this taxon." At the time of this statement, Olsen was unaware of my up-coming description of *Z. delgadoana* Turner (1985), which I take the specimens concerned to be, largely based upon description and location (Map 2).

ZALUZANIA DISCOIDEA A. Gray, *Proc. Amer. Acad. Arts* 21: 388. 1886. **Map 2**

w Chi and n Dur in pine-oak woodlands, 1900-2200 m; Oct-Sep.

Perennial herbs to 2 m high; stems thick, simple, striate, densely soft-puberulent; leaves 8-15 cm long, 4-10 cm wide; petioles 1-2 cm long; blades broadly ovate to deltoid or subcordate, bicolored, the lower surface densely white-tomentose, the margins dentate to shallowly lobulate; heads discoid, numerous in terminal corymbose

panicles, the ultimate peduncles mostly 5-15 mm long; involucre 5-6 mm high, the bracts white-puberulent, subequal; disk florets numerous, the corollas yellow, capping the achenes; body of achenes ca 2 mm long, glabrous; chromosome number, $n = 18$ pairs.

This species is readily recognized by its discoid heads and large, bicolored, leaves.

ZALUZANIA DURANGENSIS B.L. Turner, sp. nov. Fig. 1, Map 2

Zaluzania discoideae A. Gray similis sed differt foliis ovatis (vs cordatis) non bicoloribus (vs valde bicoloribus) et capitulis radiatus (vs discoideis).

Perennial herbs, 0.8-1.7 m high. **Stems** mostly unbranched, stiffly erect, purplish, ca 5 mm thick. **Leaves** ovate, alternate throughout, 6-10 cm long, 3-5 cm wide; petioles 1-10 mm long, tapered upon by the blades for 1-2 cm; blades ovate, sparsely pubescent to glabrate above and below, the lower surfaces glandular-punctate with black dots, the margins weakly serrulate. **Capitulescence**, a terminal corymbose panicle of ca 15 heads, the ultimate peduncles 1-3 cm long, puberulent with appressed hairs. **Heads** 1.5-2.0 cm across the extended rays. **Involucral bracts** 2-3 seriate, 4-5 mm long, pubescent like the peduncles. **Ray florets** ca 8, neuter; ligules yellow, ca 8 mm long, 3-4 mm wide, ca 8-nervate; tube ca 1 mm long. **Receptacle** conical, ca 2.5 mm across, the chaff lanceolate. **Disk florets** numerous; corollas 2-3 mm long, yellow, pubescent. **Anthers** markedly black. **Achenes** (immature) epappose, pubescent.

TYPE: MEXICO. DURANGO: "Santiago Papasquiario. 159 km al W de Santiago Papasquiario sobre la carretera a Canelas." Bosque de pino-encino, 2600 m, 28 Aug 1991, *Jose L. Panero 2248C* [with S. Gonzalez & S. Acevedo]. (Holotype: TEX).

ADDITIONAL SPECIMEN EXAMINED [immature]: MEXICO. CHIHUAHUA. "Llano Grande; 5-6,000 ft." 23 Jul 1965, *Pennington 104* (TEX).

The most striking character of this species is the foliage, possessing nearly glabrous, dark green leaves, the blades tapering upon the petioles, often completely so; the holotype was initially identified by its collector as *Z. megacephala*, which it superficially resembles.

The above cited Pennington collection from "Llano Grande," located in southern Chihuahua (Pennington 1963), gives the Indian name and use as, "oreja del venado; a pasturage plant."

ZALUZANIA MEGACEPHALA Sch.-Bip., Flora 44: 563. 1861.

Map 3

Zaluzania cinerascens Sch.-Bip.

Zaluzania coulteri Hemsl.

Zaluzania megacephala var. *coahuilensis* Olsen

Coa, Nue, Tam, Que, Hid, e Jal and Mex, pine-oak forests, 1900-2900 m; Jul-Oct.

Perennial erect herbs to 1.5 m high, the stems simple and arising from short rhizomes which bear 1 or more fleshy tubers; leaves broadly ovate to lanceolate, mostly 3.5-8.0 cm long, 1.5-5.0 cm wide, the blades abruptly or gradually tapering upon the short petioles, moderately to densely and softly pubescent, especially below, sometimes forming a soft white tomentum beneath, the margins serrulate; heads in terminal subfasciculate, corymbose, rounded panicles, the ultimate peduncles mostly 0.5-2.0 cm long; involucre 2-3 seriate, the bracts 4-8 mm long, somewhat graduate to subequal; ray florets 8-11, the ligules yellow, 5-14 mm long; disk florets numerous, the corollas yellow, capping the achenes; achenes black, glabrous or nearly so, 1.0-2.6 mm long, epappose; chromosome number, $n = 18$ pairs.

This is a widespread variable species. Olsen (1979) recognized two varieties, largely based upon leaf shape and vestiture, but these appear to be but individual or populational forms, their being much variation in the characters concerned. Populations of *Z. megacephala* from nw Dur, reported as var. *coahuilensis* by Olsen (1979), appear to be *Z. durangensis*

ZALUZANIA MOLLISSIMA A. Gray, Proc. Amer. Acad. Arts 15: 35. 1880. **Map 3**

Coa, Zac, and San, calcareous soils of Chihuahuan Desert, 1500-2400 m; Jul-Sep.

Much-branched, rounded shrublets or shrubs, 1-3 m high; very similar to *Z. augusta* but the heads larger with longer rays, as noted in the key to species; the primary leaves are somewhat thicker and larger with usually two rounded lobes at the base; chromosome number, $n = 27$ pairs.

As noted above, this taxon is close to *Z. augusta* but differs in leaf shape (primary leaves), head size and chromosome number (hexaploid in *Z. mollissima*, tetraploid in *Z. augusta* - assuming a base number of $x = 9$). Olsen (1979) notes that *Z. mollissima* occurs within a few miles of *Z. augusta*, but this is not shown on his map (Fig. 2) showing their distributions.

ZALUZANIA MONTAGNIFOLIA (Sch.-Bip.) Sch.-Bip., Flora 44: 563. 1861. **Map 4**

Zaluzania asperrima Sch.-Bip.

Pue, Ver, Gue and Oax, mostly subtropical deciduous forests, 1500-2200 m; Sep-Dec.

Shrubs to 4 m high; stems much-branched, striate, hirsutulous, with age glabrate; leaves alternate, 5-9 cm long, 1.5-4.8 cm wide; petioles 1-2 cm long, strongly winged, dilated at the base; blades ovate to deltoid, pubescent above and below, the lower surface densely glandular-punctate with amber glands, the margins variously dentate; heads radiate, numerous in stiffly divaricate corymbose panicles; involucre 2-3 seriate, 3-5 mm high, the bracts subequal; ray florets 5-11, the ligules yellow, mostly 5-8 mm long; disk florets 50-80, the corollas yellow; achenes 1.5-2.0 mm long, glabrous, epappose; chromosome number, $n = 18$ pairs.

See additional comments under *Z. pringlei*.

ZALUZANIA PARTHENIOIDES (DC.) Rzedowski, Brittonia 20: 167. 1968. **Map 4**

Aiolotheca parthenioides DC.

Zaluzania robinsonii W.M. Sharp

Coa, Nue, Tam, Agu, Zac, San, Gua, Que and Hid, mostly Central Plateau of the Chihuahuan Desert regions, 1500-2100 m; Jul-Dec.

Perennial, ashen-colored, suffruticose herbs to 1 m high; much resembling *Z. triloba* but amply distinct, both in its mostly trilobate, less dissected, leaves and smaller heads and receptacles, but it is most readily distinguished from the latter by its uniformly soft, white-puberulent, vestiture, not at all like the coarse, glandular-hispid, vestiture of *Z. triloba*; chromosome number, $n = 18$ pairs.

Olsen (1979) treated this taxon as synonymous with *Z. triloba*. While noting the very different vestitures that seem to mark the two taxa, he concluded that the "characters used to separate these taxa intergrade completely." He further contended that plants "growing in the sun usually have the characters attributable to *Z. triloba*, while plants found growing in the shade have the characters attributable to *Z. parthenioides*." I do not find intergrades between these at all and conclude that he was dealing with very well marked sympatric species that do not appear to intercross, even when growing together. Similar conclusions have also been reached by Rzedowski, and yet others.

ZALUZANIA PRINGLEI Greenm., Proc. Amer. Acad. Arts 39: 101. 1903. **Map 5**

Mor, w Pue and Gue, subtropical deciduous forests, 1000-1500 m; Oct-Dec.

Shrubs 2-3 m high, the lower stems up to 5 cm in diameter; leaves mostly 4-8 cm long, 2-4 cm wide; petioles 5-15 mm long, often winged; blades ovate to deltoid, thick, 3-nervate to seemingly pinnately nervate, coarsely pubescent above with broad-based hairs, similarly pubescent beneath or merely white-puberulent without broad-based,

coarse hairs, the margins crenulodentate; heads discoid or radiate, 10-60 in terminal corymbose panicles, the ultimate peduncles mostly 5-15 mm long; involucre 4-5 mm high, the bracts sparsely puberulent, subequal; ray florets, when present, 1-5, the ligules white, 2-3 mm long; disk florets numerous, the corollas white, capping the achenes, sparsely to densely puberulent; achenes glabrous, mostly 1.5-2.2 mm long, epappose.

Zaluzania pringlei is closely related to *Z. montagnifolia*, but readily recognized by its white disc and ray florets; populations of both taxa occur near Chilpancingo, Gue, but appear not to hybridize or intergrade.

ZALUZANIA SUBCORDATA W. Sharp, Ann. Missouri Bot. Gard. 22: 111. 1935. **Map 5**

Pue and closely adjacent Ver and Oax, in dry oak-juniper woodlands, 1900-2200 m; Sep-Nov.

Shrubs 1-3 m high; stems white-tomentulose at first, but reddish-glabrate with age; leaves bicolored, thick, the blades deltoid, densely white-tomentulose beneath, abruptly tapering upon the petiole, the margins dentate to nearly entire; much resembling *Z. augusta* but distinguished by its broader, deltoid to cordate blades and broad rounded capitulescence which extends somewhat above the leaves, the ultimate peduncles mostly 10-25 mm long; chromosome number, $n = 36$ pairs.

This is a rather localized, well-marked, taxon reportedly infrequent on hillsides about Esperanza, Pue.

ZALUZANIA TRILOBA (Ort.) Pers., Syn. Plant. 2: 473. 1807.
Map 6

Acmella trilobata Spreng.

Anthemis sinuata La Llave & Lex.

Anthemis trilobata Ort.

Nue, Zac, Agu, San, Gua, Que, Hid, Mex, Tla, Pue, Ver and Oax, in dry calcareous or gravelly soils, 1800-2400 m; Aug-Nov.

Erect, suffruticose, perennial herbs to 1 m high; stems striate, brittle, coarsely pubescent with spreading multicellular whip-like trichomes 1-3 mm long, interspersed among numerous, short, glandular-trichomes; mid-stem leaves 6-12 cm long, 3-5 cm wide; petioles 1-4 cm long; blades tripartite or pinnately parted, pubescent on both surfaces like the stem; heads radiate, 3-50 in corymbose panicles, the ultimate peduncles mostly 1-8 cm long; involucre 2-3 seriate, the bracts 2-4 mm long, subequal; receptacles conical, ca 3.5 mm high, ca 2 mm wide, paleate, the pales persistent, 3-lobed at the apex; ray florets 8, the ligules yellow, 5-10 mm long; disk florets numerous the corollas yellow, 2.5-3.0 mm long, "capping" the apex of the achene; achenes black, glabrous, ca 2 mm long, epappose; chromosome number, $n = 18$ pairs.

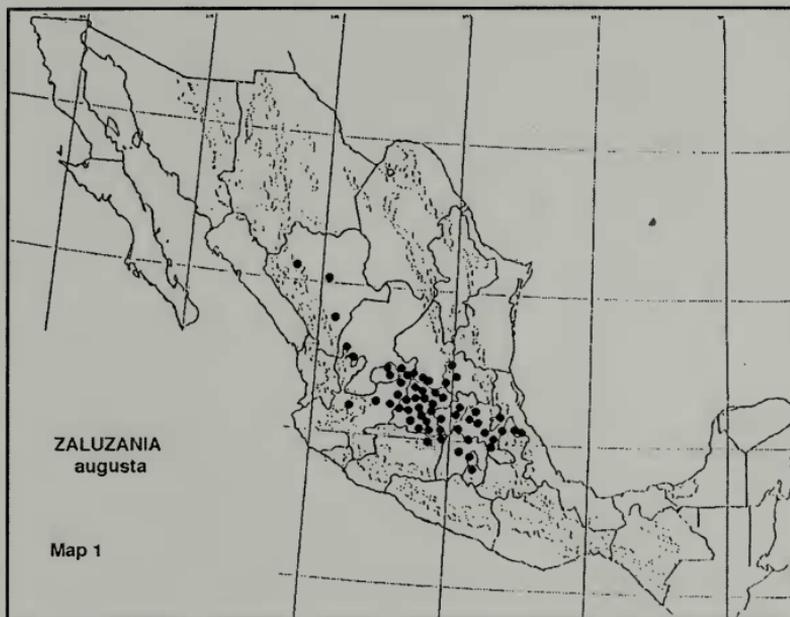
Olsen (1979) combined *Z. parthenioides* with this species, but I think incorrectly, a conclusion shared with Rzedowski (1968). The two species are quite different in vestiture and yet other characters, as noted under *Z. parthenioides*.

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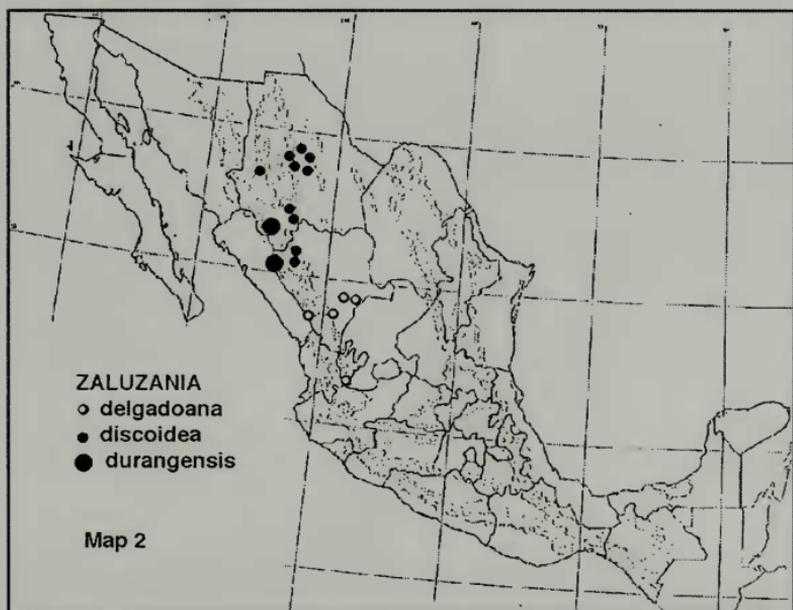
Thanks to Guy Nesom for the Latin diagnosis and reviewing the manuscript, and to my colleague, Jose Panero, for helpful suggestions.



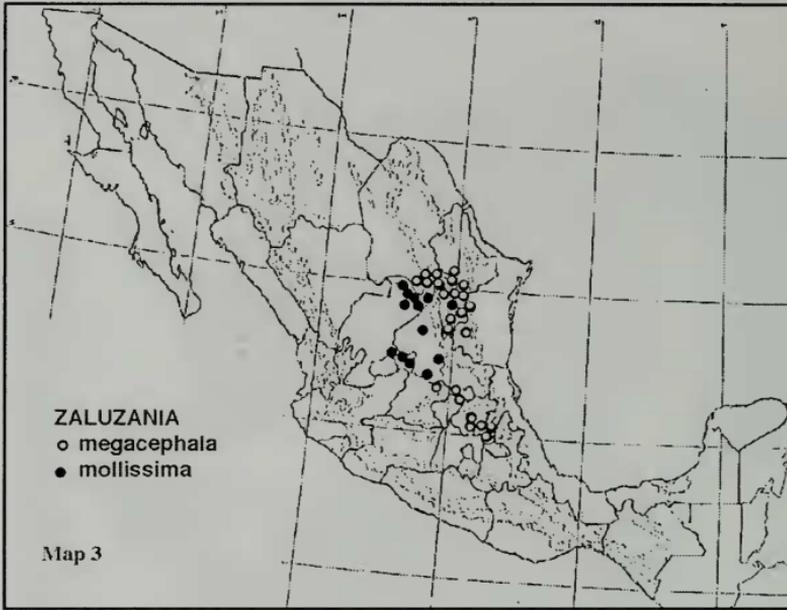
Fig. 1. *Zaluzania durangensis*, holotype.



Map 1. *Z. augusta*



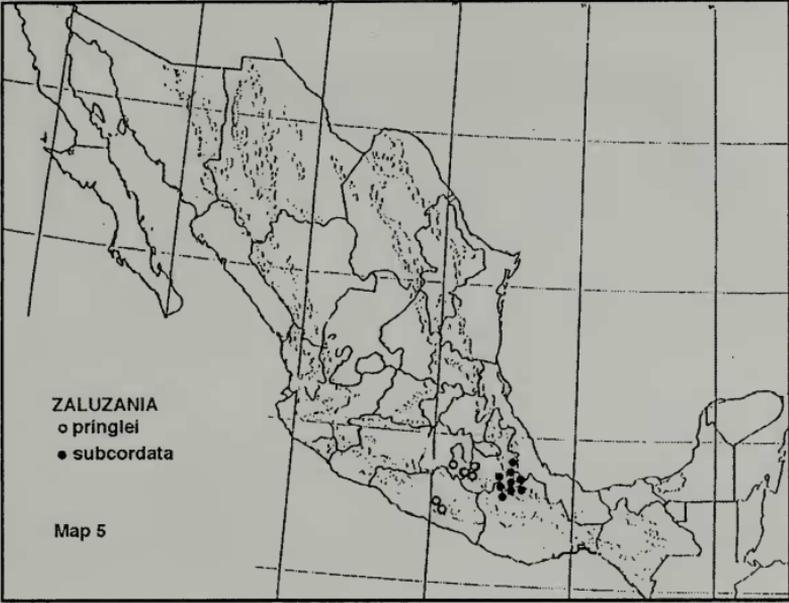
Map 2. *Z. delgadoana*, et. al.



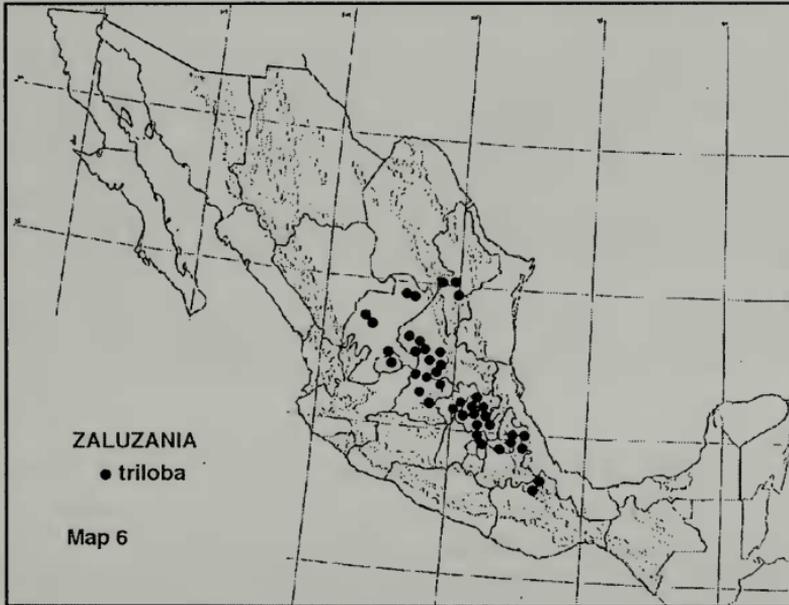
Map 3. *Z. megacephala* and *Z. mollissima*



Map 4. *Z. montagnifolia* and *Z. parthenoides*



Map 5. *Z. pringlei* and *Z. subcordata*



Map 6. *Z. triloba*